

ABSTRACT

Biogas is an alternative energy that can be used as energy other than fuel. Biogas contains methane gas which can be obtained by anaerobic processes. Methane gas is one of the flammable natural gases. So it is necessary to monitor its concentration. Increasing the safety of biogas production, IoT-based sensors are needed so that they can be monitored anywhere. The biogas that comes out of the reactor pipe uses the MQ-4 sensor. The sensor measurement results will then proceed to Arduino Uno to calculate the concentration of methane gas. The results of the data obtained will then enter the GSM module which can send data to the server, after that then be monitored by cellphones, websites, and applications anywhere. Multi-gas will be used for the calibration and characterization process of the designed tool. This monitoring system is designed and able to measure methane gas concentrations in the range of 0 ppm - 10,000 ppm with an average error of 4.8% and a maximum error of 24.6% at low concentrations. This research is the development of a gas concentration monitoring system from previous research by adding the IoT concept to it. The Internet Of Things (IoT) based gas concentration monitoring system uses a GSM SIM 7000e module to transmit biogas concentration data such as methane (CH_4). Users can monitor this data using social media, applications and websites anywhere.